



# PATENT SPECIFICATION

720,222

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## COMPLETE SPECIFICATION

### A Lubrication and Fuel Oil System for Internal Combustion Engines

We, C.A.V. LIMITED, of Warple Way, Acton, London, W.3, a British Company, do hereby declare the invention, for which we pray that a patent may be granted to us, and 5 the method by which it is to be performed, to be particularly described in and by the following statement:—

A conventional method of lubricating an 10 internal combustion engine comprises the provision of an oil reservoir, or so-called sump, in the crank-shaft housing of the engine. In the course of time the oil in this reservoir becomes fouled by repeated use, and periodic replenishment is required, the 15 discarded oil being usually wasted.

The modern development of lubricating 20 oils of low viscosity has reached the stage in which such oils are essentially similar in character to fuel oils and can be used for either purpose.

It has already been proposed to employ in 25 an internal combustion engine, a lubricating oil and fuel oil system of a kind in which oil supplied from a storage tank to the lubricant-oil reservoir of the engine, is withdrawn therefrom by a pump for supplying the engine with oil to be used as fuel.

The object of the present invention is to 30 provide an improved system of the said kind, and the invention comprises a system of the kind above specified which includes two pipes having their inlet ends at different levels in the lubricating-oil reservoir of the engine, and a pump in each such pipe, the pipe having 35 its inlet at the higher level serving to supply to the engine the oil required as fuel, and the other serving to supply to the engine the oil required as lubricant.

In the accompanying drawings, Figures 40 1—3 illustrate three typical embodiments of the invention.

Referring to Figure 1, an oil storage tank *a* is provided in communication with the lubricating oil reservoir or sump *b*, of the engine *c*. Some of the oil is withdrawn from the sump 45 by a feed pump *d* for supplying it through a filter *e* and a fuel injection pump *f* to the engine as fuel oil.

If desired a valve *g* operated by a float *h* 50 or other equivalent means may be provided in a sub-chamber *i* on the sump for regulat-

ing the flow of oil from the tank so as to maintain a constant oil level in the sump. Moreover, the inlet end of the pipe *j* which supplies the feed pump *d* is so arranged that 55 a sufficient quantity of oil is at all times held in the sump to maintain adequate lubrication of the engine. The oil required for lubricating the engine is supplied by a pipe *k* and a pump *m*, the inlet end of this pipe being 60 situated near the bottom of the sump.

In the arrangement shown in Figure 1, the tank *a* is situated at a level from which the oil can flow into the sub-chamber *i* by gravity. When it is required to mount the tank at 65 a lower position, the arrangement shown in Figure 2 is used. In this arrangement, oil is supplied from the tank by a pump *n*. In combination with the pump is provided a bypass *o* containing a spring-loaded relief valve 70 *p* which allows liquid to circulate idly around the pump when the valve *g* is closed.

In the arrangement shown in Figure 3, oil is fed directly to the sump *b* from a tank *a* situated at a lower level than the sump by a pump *q*, the float-controlled valve shown in Figures 1 and 2 being not provided in this arrangement. Oil is returned from the sump to the tank by an overflow pipe *r* which determines the upper level of the oil in the sump. 80 Otherwise the arrangement is similar to the others above described.

What we claim is:—

1. A system of the kind specified in which the same oil is used in an internal combustion engine both as a lubricant and as fuel, which includes two pipes having their inlet ends at different levels in the lubricating oil reservoir of the engine, and a pump in each such pipe, the pipe having its inlet at the 90 higher level serving to supply to the engine the oil required as fuel, and the other serving to supply to the engine the oil required as lubricant.

2. A system as claimed in Claim 1, in 95 which the oil is supplied from the tank to the reservoir in the engine through a float-controlled valve.

3. A system as claimed in Claim 1, in which oil is circulated between the tank and the reservoir in the engine by a pump and a return overflow pipe. 100

4. A system of the kind specified in which the same oil is used in an internal combustion engine both as a lubricant and as fuel, comprising the combination and arrangement

of parts substantially as described and as 5  
illustrated by Figure 1, 2 or 3 of the accom-  
panying drawings.

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PROVISIONAL SPECIFICATION

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Acton, London, W.3, a British Company, do  
10 hereby declare this invention to be described  
in the following statement:—

A conventional method of lubricating an  
internal combustion engine comprises the  
provision of an oil reservoir, or so-called  
15 sump in the crank-shaft housing of the  
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reservoir becomes fouled by repeated use,  
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discarded oil being usually wasted.

20 The modern developments of lubricating  
oils of low viscosity has reached the stage in  
which such oils are essentially similar in char-  
acter to fuel oils and can be used for either  
purpose.

25 The object of the present invention is to  
enable such oils to be used for lubricating  
purposes in a more satisfactory manner than  
by the conventional method above men-  
tioned, and the invention consists of a system  
30 in which oil is supplied from a storage tank  
to the lubricant-oil reservoir of the engine,  
and is continuously withdrawn therefrom by  
a pump for supplying the engine with the re-

quired fuel oil.

In one manner of carrying the invention 35  
into effect, an oil storage tank is provided in  
communication with the lubricating oil reser-  
voir or sump, of the engine. Some of the oil  
is withdrawn from the sump by a pumping  
means for supplying it to the engine as fuel 40  
oil. The said means may include a feed  
pump which supplies an injection pump, the  
latter serving to deliver the oil to the engine  
cylinders.

If desired a float-valve or other equivalent  
means may be provided for regulating the  
flow of oil from the tank so as to maintain a  
constant oil level in the sump. Moreover, the  
pipe which supplies the pumping means is so  
arranged that a sufficient quantity of oil is at 45  
all times held in the sump to maintain ade-  
quate lubrication of the engine.

By this invention a continuous flow of oil  
through the sump is obtained, and the con-  
tent of the sump is constantly renewed, thus  
avoiding fouling and wastage of the lubricat-  
ing oil and enabling a desirable economy to  
be effected on the use of the oil. 50

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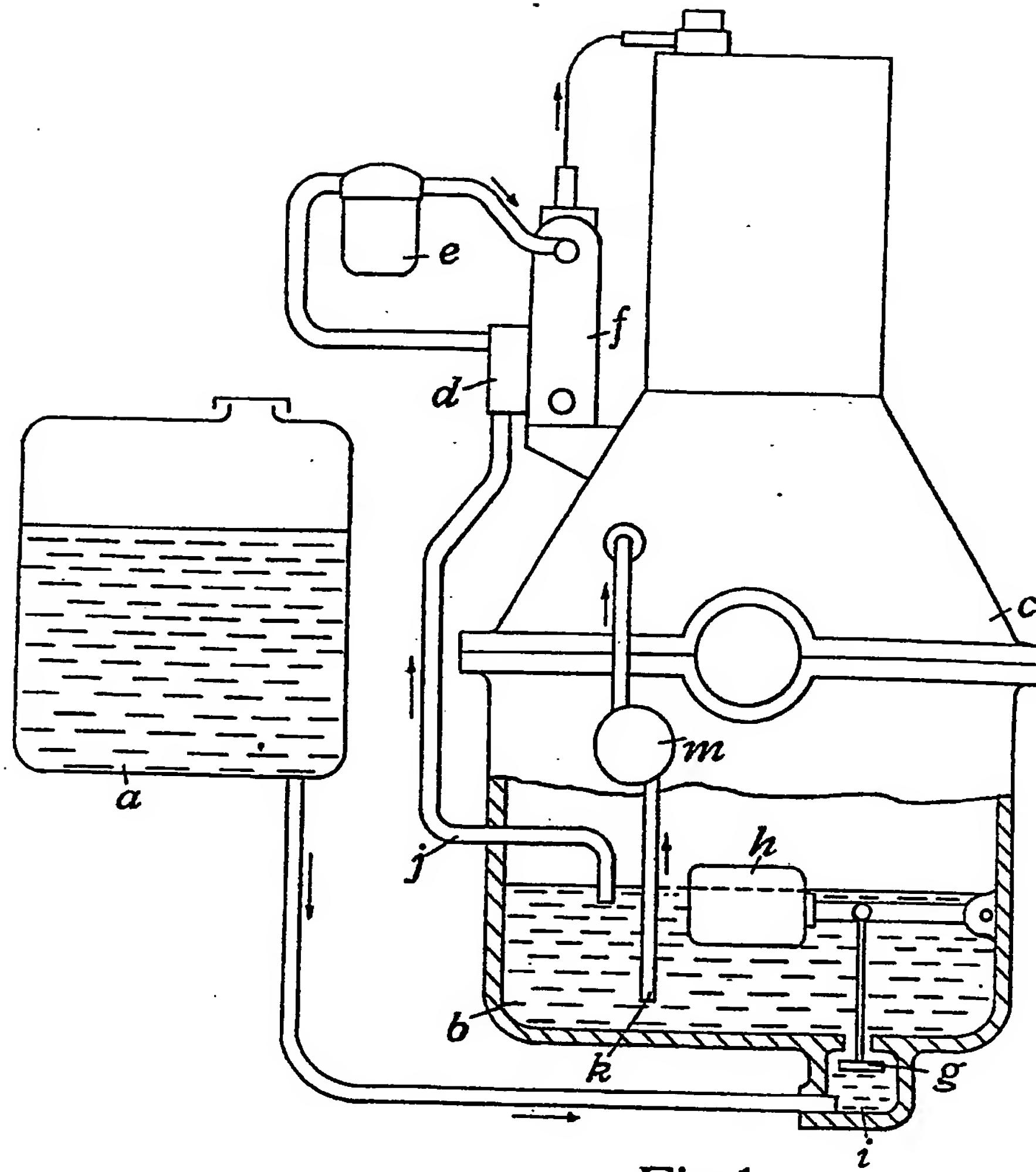


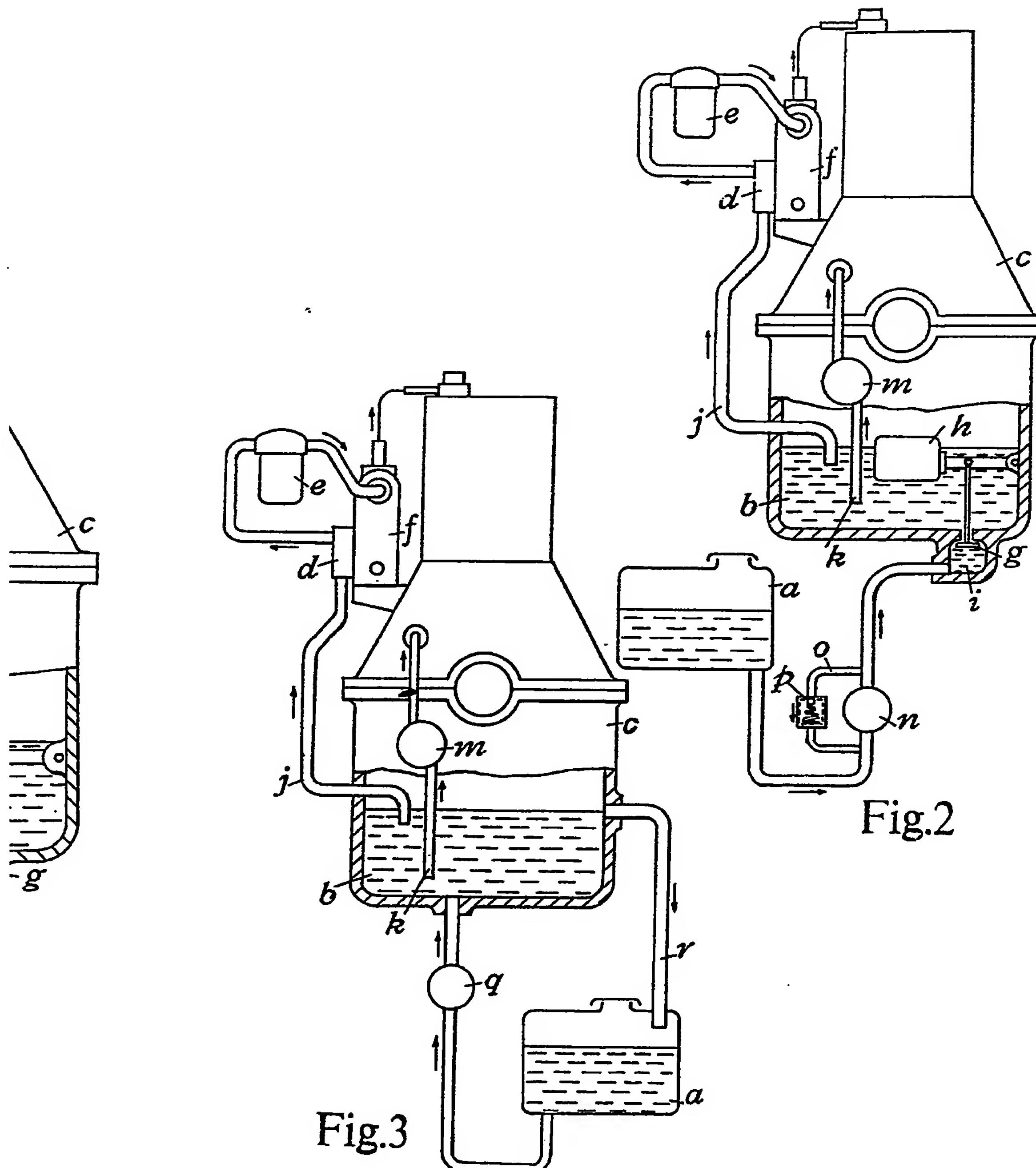
Fig. 1

720,222 COMPLETE SPECIFICATION

2 SHEETS

*This drawing is a reproduction of  
the Original on a reduced scale.*

SHEETS 1 & 2



720,222 COMPLETE SPECIFICATION  
2 SHEETS This drawing is a reproduction of  
the Original on a reduced scale.  
SHEETS 1 & 2

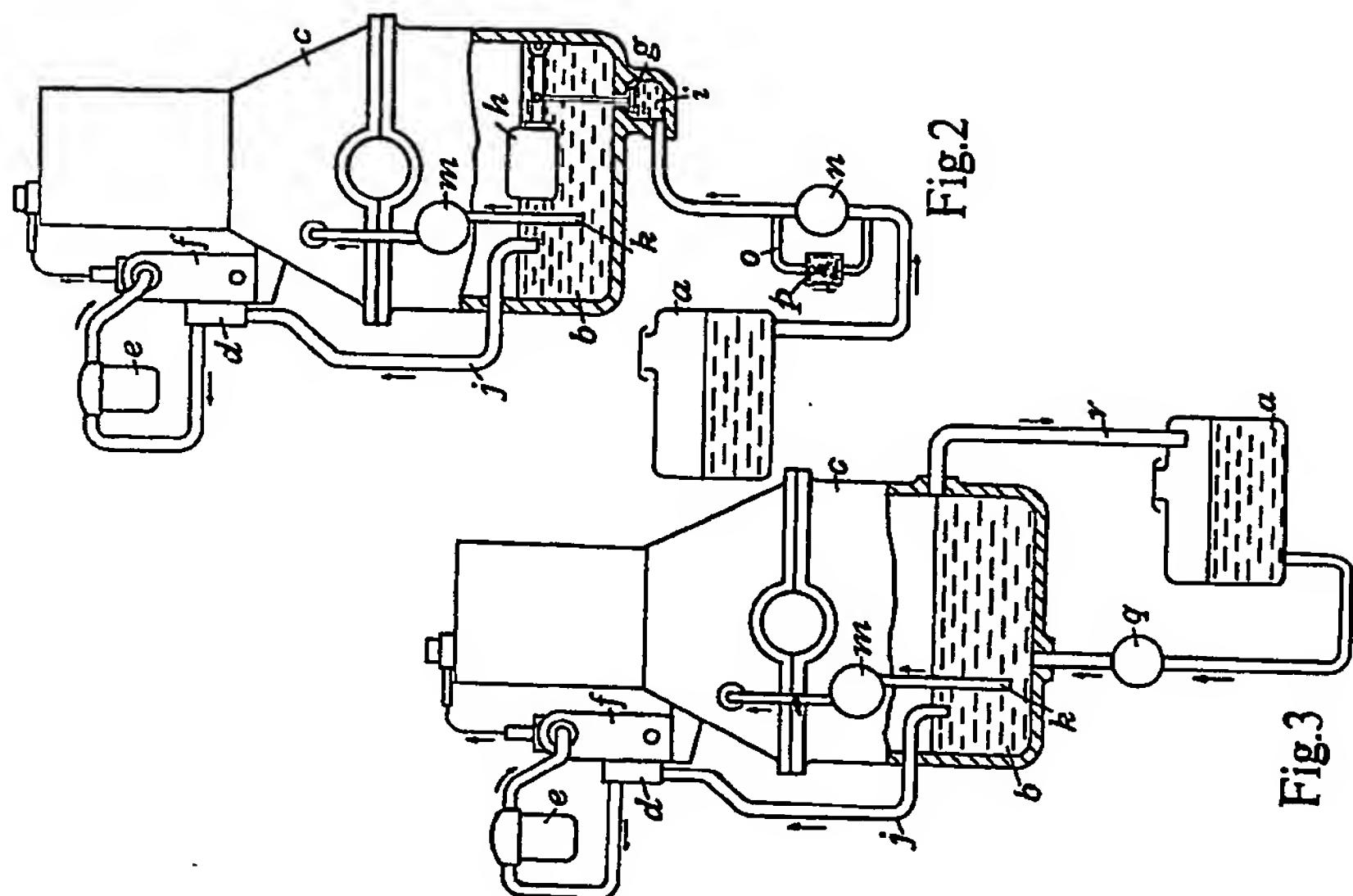


Fig.2

Fig.3

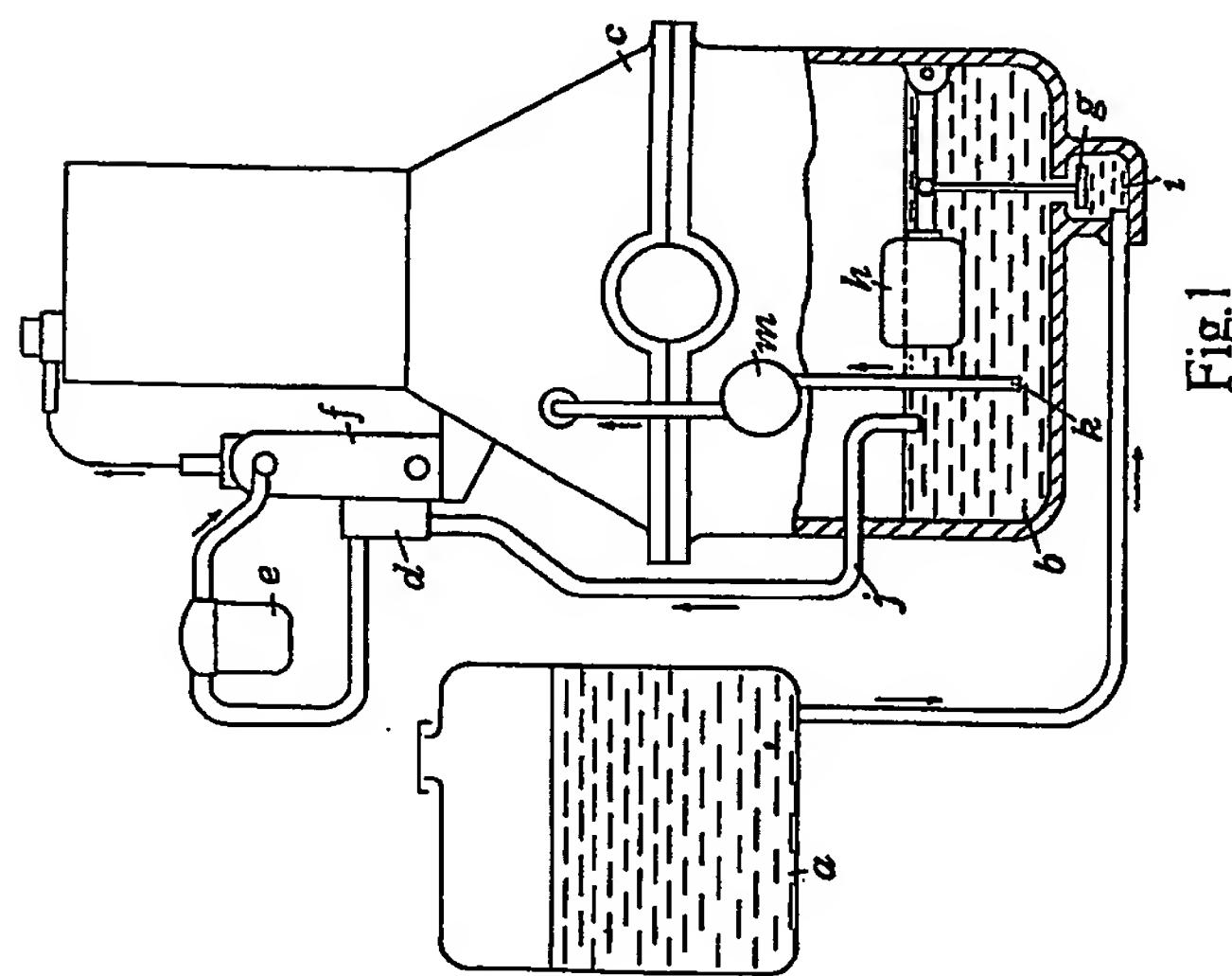


Fig.1

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